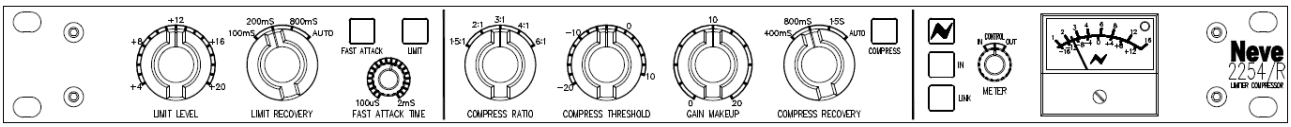
2254/R
Limiter Compressor

User Manual

527 - 386
Issue 1



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Health & Safety Notice

For your own safety and for the protection of others, please observe the following safety precautions:

- Read these instructions.
- Heed all safety warnings.
- Do not use near water.
- Clean only with a dry cloth.
- Do not install near heat sources.
- Do not block ventilation openings.
- Protect the power cord.
- Only use accessories specified by the manufacturer.
- Unplug when unused for long periods of time.
- Refer all servicing to qualified personnel only.

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Introduction

The **2254/R** Limiter Compressor is a sophisticated and powerful tool for the control of programme dynamics, and has been designed specifically for the sound recording industry.

To this end, considerable range of control is provided within a small unit whilst adhering to high standards of performance.

It is based on the classic 2254 series originally released in 1970.

Principles of Operation

A single control element is used, capable of some 50dB of gain change with low distortion and noise.

This element is driven by two independent sidechains – one of which acts a limiter and the other which acts as a compressor.
Each of these functions operates in a closed loop and may be used in isolation or together.

- The **Compressor** sidechain samples the programme level before the output line amplifier, thus enabling make-up gain to be provided where necessary.
  A series of shaping networks are employed to yield five different compression ratios and by controlling the effective sidechain gain, the threshold may be varied over a wide range.

- The **Limiter** sidechain samples the line amplifier output and thus controls the absolute limit of the programme.

A variety of time constants are available to suit the nature of the programme.

Where two 2254/R units are used together to control the left and right signals of a stereo programme, the control voltages from the two sidechains may be linked to ensure that no shift in image takes place.

Recall Software

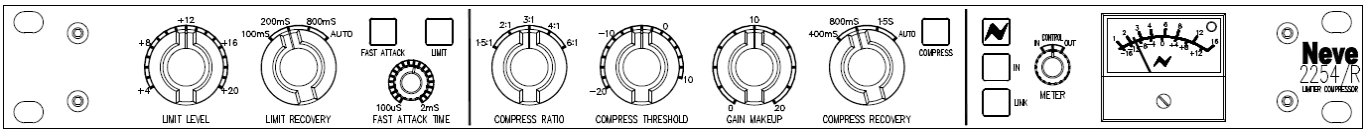
All of the switches and settings on the unit can be recalled for later reset using the Recall software.

The settings of up to 16 units can be stored and recalled in this way using either discrete USB ports on your computer (or Mac) with one per unit, or using a powered USB hub.

All soft switches are instantly recallable using a single mouse click, while rotary controls are reset manually by matching them to on-screen graphics.

The Recall software is the same as that which is used for the 88 series of Neve outboard units (8801, 8803, 8804 and 8816).

Front Panel Controls



Power

The Neve logo switch to the left of the meter switches the unit on and off.

The button will light red when the unit is on.

In

Lights yellow when selected, and sends the signal through the units circuitry, even if the unit does not have the Limit or Compress functions selected.

The unit constitutes a buffer amplifier having high input and low output impedance.

If unlit, the Input XLR on the rear of the unit is connected directly to the Output XLR i.e. the unit is bypassed.

Link

Lights yellow when selected.

Press this button when you wish to link two 2254/R units together so they can process the Left and Right of a stereo signal, first making sure that the 9-pin Link sockets on the rear of both units are connected together.

See pin-outs information on page 8.

Limiter section

Limit

Lights yellow when selected, and switches the Limiter sidechain in and out of circuit.

Limit Level

May be set in steps of 2dB from +4dBu to +20dBu.

Limit Recovery

There are three preset recovery times (100ms, 200ms & 800ms), plus an automatic setting (AUTO).

In the **AUTO** position, both the Attack and Recovery times are composite and self-adjusting.

Speeds are rapid for isolated peaks, while remaining slow for persistently high levels, so the impression of a normal dynamic range is preserved as the programme rides on a slowly moving 'gain platform'.

Fast Attack

Lights yellow when selected.

When unlit, the unit has a much slower attack time (5mS), so as to avoid unpleasant effects when processing signals of a percussive nature (such as solo piano).

In this way, a narrow dynamic range may be achieved by feeding high levels into the 2254/R and choosing a low limit level.

Fast Attack Time

When **FAST ATTACK** is selected, the attack time can be set from 100µS to 2mS using the associated rotary control.

This control is continuously variable and is fully sweepable between those two values.

If **FAST ATTACK** is unlit, this control has no function.

Compress section

Compress

Lights yellow when selected, and switches the Compressor sidechain in and out of circuit.

Compress Ratio

Five preset ratios are provided.

- 1.5:1
- 2:1
- 3:1
- 4:1
- 6:1

The control characteristic is shaped such that the onset of compression is smooth and progressive, the true ratio being reached within the first 5 to 10dB above the Threshold.

Compress Threshold

The Threshold point can be varied in 2dB steps from -20dBu to +10dBu, thus a wide variety of effects can be achieved.

Low Ratios operated with a low Threshold will preserve the dynamic range and also achieve a high signal to noise ratio.

A high Ratio with a high Threshold will behave as a partial limiter.

Gain Make Up

When a Threshold point below line level is chosen, it is necessary to add gain beyond the compressor so as to restore the mean programme level. The gain control provides up to 20dB of additional gain in 2dB steps.

Compress Recovery

Three presets are provided:

- 100 mS
- 200 mS
- 800 mS

plus an **AUTO** setting.

In the **AUTO** position, both the Attack and Recovery times are composite and self-adjusting.

Speeds are rapid for isolated peaks, while remaining slow for persistently high levels, so the impression of a normal dynamic range is preserved as the programme rides on a slowly moving 'gain platform'.

Meter

The programme meter is operated by a simple drive circuit with rapid attack and slow decay times, that correspond to the typical PPM characteristic.

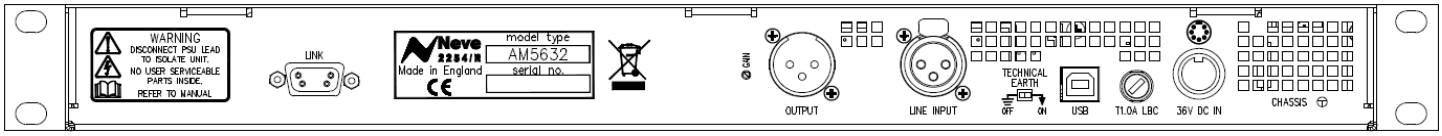
The green led to the right side of the meter will light at a threshold of about -10dBu.

The led turns red when the program reaches a level of +25dBu, indicating imminent clipping.

The meter can be set to display either the Input signal level (**In**), Output signal level (**Out**) or the amount of gain reduction applied to the signal by the compressor and limiter in total (**Control**).

This selection is set by the adjacent **Meter** knob.

Rear Panel



Line Input

Input XLR.

Pin 1	Screen
Pin 2	Hi
Pin 3	Low

Output

Output XLR.

Pinouts as above.

Set Gain

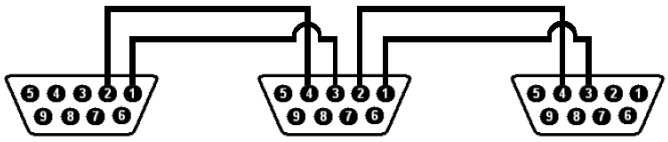
This trim pot allows you to set the overall gain of the unit to be 0dB in and 0dB out.

This is useful if, for example, the load of the unit connected to the Output is 600Ω.
This would mean the level of the unit would drop by about 1dB, so the Gain Trim allows you to compensate for this.

The default factory setting is 0dB in, 0dB out, with a load of 100kΩ.

Sidechain Link

Links the sidechains of two or more 2254/R units so that they can all work with reference to the same sidechain.



For example, when each unit is processing the Left and Right of a stereo image, this prevents sudden and unexpected changes to one side of the image, so the stereo image is maintained.

This link carries the total of the compressor and limiter sidechains, and the compressor with the highest amount of gain reduction will apply it's gain reduction to the others.

Power DIN socket

The unit requires 36v DC, and this 8 pin DIN socket should only be connected to the power supply provided with the 2254/R.

It is not possible to insert the power connector into this socket incorrectly.

Please refer to the adjacent diagram for connector orientation.

Fuse

A T1.0 amp LBC fuse is fitted.

In the event of the unit failing to power up, this fuse should always be checked first.

The fuse should always be replaced with one of the same value.

USB

The USB socket is a Type B connector used to connect the 2254/R to a PC or Mac for storing & recalling unit settings.

Technical Earth

*!! **WARNING** !! Connections to technical earth and changes to grounding should only be carried out by qualified personnel.*

The grounding of the unit can be set in two different ways:

With this switch in the **Off** position the chassis of the unit is connected to the mains earth via the power supply.

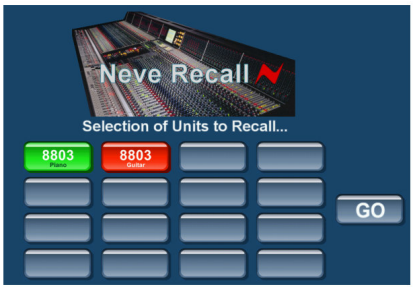
With the switch in the **On** position the chassis of the unit should be connected to the studio technical earth using the adjacent **Chassis** connector.

For safety reasons the chassis is NOT disconnected from the mains Earth but is connected through a resistor capacitor filter.

Chassis

Connect this to your studio earth, and switch **Technical Earth** On.

Recall Software



Neve Recall software allows settings from the 2254/R to be stored on a PC or Mac and recalled for later use.

The Recall software can also be used for all the units in the 88 Outboard range including 8801, 8803, 8804 & 8816.

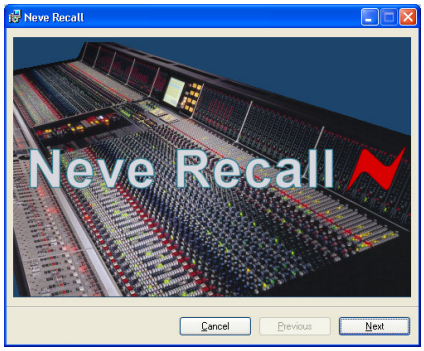
Multiple units can be stored and recalled together, up to a total of 16 units.

NB: When connecting via a USB hub, a powered hub must be used, and not a passive one.

Please see the Recall Manual for further details.
This is available for download from the AMS-Neve web site at**:**

http://www.ams-neve.info/

Installation for PC

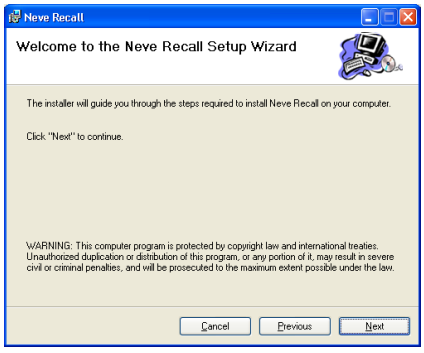


Insert the CD into the drive and the Set-up program should automatically launch.

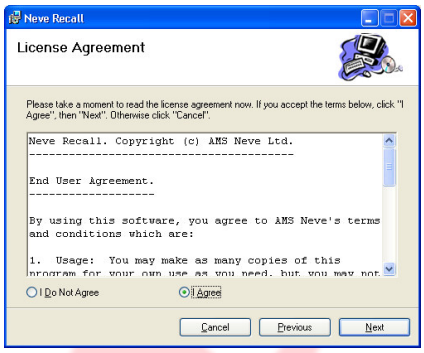
If the application fails to launch automatically on CD insertion, then go to the CD Drive in Windows Explorer and double-click the **NeveRecall.msi** file or the **setup.exe file** the file to launch the Setup program manually.

The Welcome screen will launch.

Click **Next**.

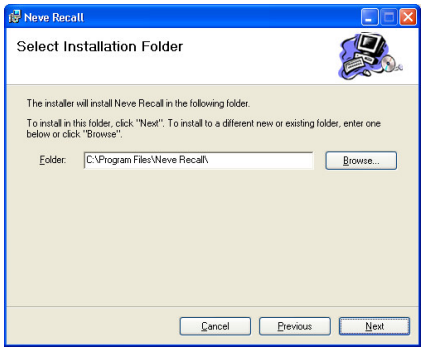

Neve Recall
Welcome to the Neve Recall Setup Wizard
The installer will guide you through the steps required to install Neve Recall on your computer.
Click "Next" to continue.
WARNING: This computer program is protected by copyright law and international treaties. Unauthorized duplication or distribution of this program, or any portion of it, may result in severe civil or criminal penalties, and will be prosecuted to the maximum extent possible under the law.
Cancel
Previous
Next

Click **Next**.


Neve Recall
License Agreement
Please take a moment to read the license agreement now. If you accept the terms below, click "I Agree", then "Next". Otherwise click "Cancel".
Neve Recall. Copyright (c) AMS Neve Ltd.
End User Agreement.
By using this software, you agree to AMS Neve's terms and conditions which are:
1. Usage: You may make as many copies of this
I Do Not Agree
I Agree
Cancel
Previous
Next

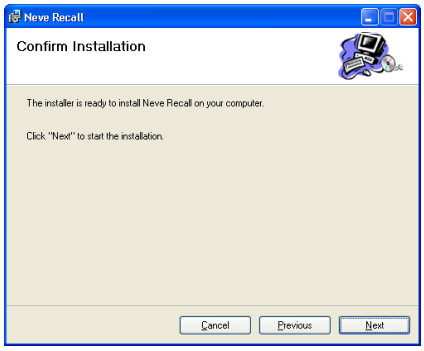
Click **I Agree**, then click **Next**.

If you click **I Do Not Agree**, the install will terminate.

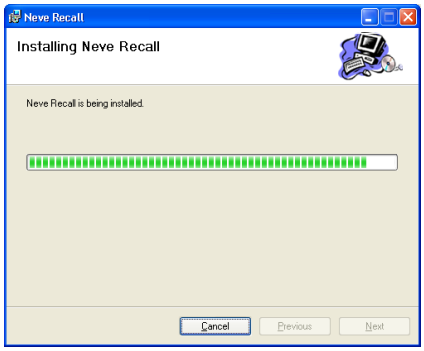

Neve Recall
Select Installation Folder
The installer will install Neve Recall in the following folder.
To install in this folder, click "Next". To install to a different new or existing folder, enter one below or click "Browse".
Folder:
C:\Program Files\Neve Recall\
Browse...
Cancel
Previous
Next

The installation programme will select a default location for files to be copied and created to.

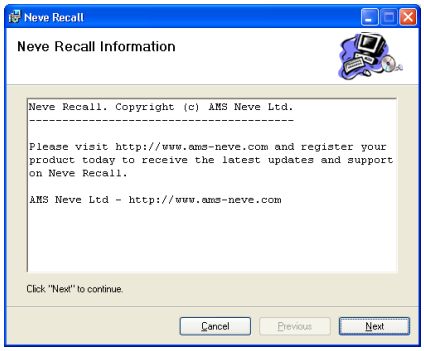
Click **Next**, or click **Browse** and then select another location.



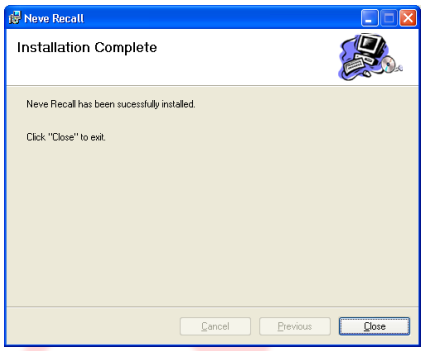
Click **Next** to start the installation.



The install will start and file progress will be shown.


Neve Recall
Neve Recall Information
Neve Recall. Copyright (c) AMS Neve Ltd.
Please visit http://www.ams-neve.com and register your product today to receive the latest updates and support on Neve Recall.
AMS Neve Ltd - http://www.ams-neve.com
Click "Next" to continue.
Cancel
Previous
Next

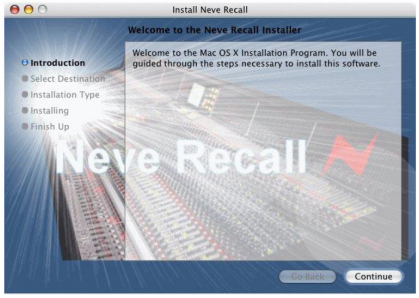
Click **Next**.



Once the install has successfully completed, click **Close**.

The software will now be ready to use, and will be accessible from **Start Menu / Programs / Neve Recall / Neve Recall**, or from the **Recall** icon on the Desktop.

Installation for Mac



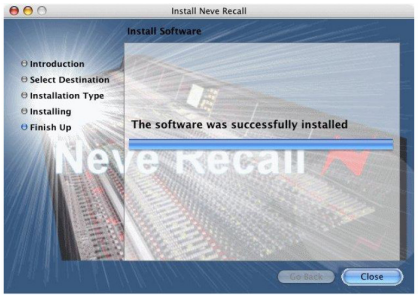
Insert the CD containing the software into the Mac, and the install programme will launch automatically.

Click **Continue**.

Select the location where you wish the software to be installed to.

Click **Continue**.

Click **Upgrade**, and the software will start to install.



The progress bar will show the state of the installation.

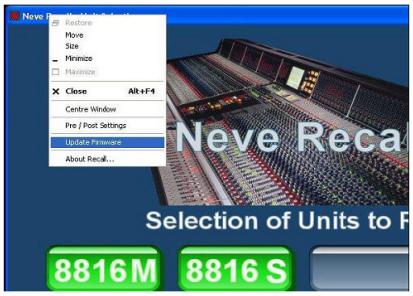
Once completed, click **Close**.

The software is now ready to use.

The Recall software will be located in the **Applications** folder and can either be run from there, or dragged onto the **Dock** and run from there.

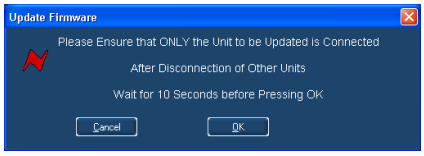
Firmware Upgrade

In order to get the most from your Neve unit, the latest firmware should be installed.

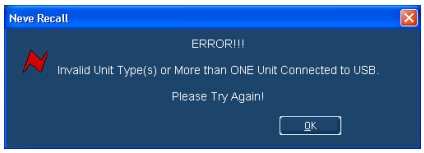


Upgrading your software is a simple process with on screens prompts to guide you.

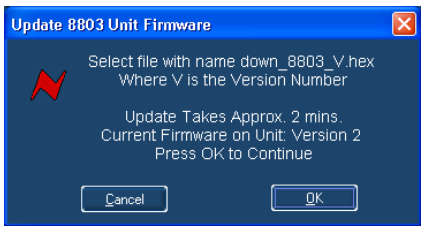
- Start the **Recall** software.
- On the main screen, right-click the window title bar (Mac users select **Recall**)
- Click **Upgrade Firmware**.
- Select the file to transfer.


Update Firmware
Please Ensure that ONLY the Unit to be Updated is Connected
After Disconnection of Other Units
Wait for 10 Seconds before Pressing OK
Cancel
OK

You will be prompted about removing other units.



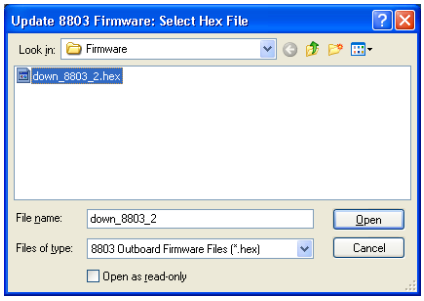
When updating units, only the unit that is being updated should be connected via USB.
All other units should have their USB disconnected. Even if you are updating two units of the same model, they should be connected individually and updated in two separate operations.
If more than one unit is connected via USB when the Update is about to be performed, a screen will prompt you to disconnect the other units.


Update 8803 Unit Firmware
Select file with name down_8803_V.hex
Where V is the Version Number
Update Takes Approx. 2 mins.
Current Firmware on Unit: Version 2
Press OK to Continue
Cancel
OK

A prompt screen will confirm the current version of firmware, plus the software you should select for the unit.

Click **OK**.

Selecting a File for Transfer

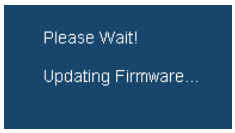


The **Open File** dialog will appear. To locate the firmware data file, browse to the location:

- PC users: C:\Program Files\Neve Recall\Firmware
- Mac users: Applications\Neve Recall\Firmware

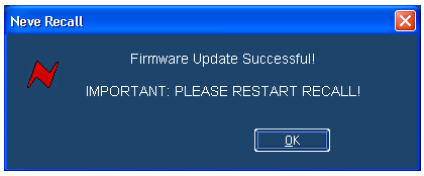
Double click on the latest filename which matches your unit. If an incorrect file is selected the user will be prompted to select another file.

File Downloading



Once the file is selected the transfer will begin, and the Recall screen will display that the download is under way.

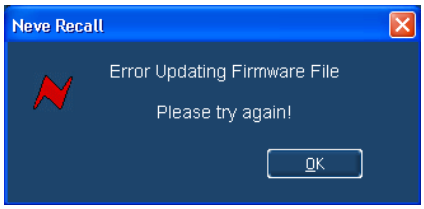
This process may take up to two minutes.



Upon completion, the message **Firmware Update Successful** will be displayed.

Click **OK** to continue.

You can continue to update other units successfully without restarting Recall, but the Recall software must be restarted once this process is finished.



If the transfer fails (for example if the USB is removed by accident or power is lost to the unit), a warning message will prompt to the user to try again.

If Recall is started with a unit that has no firmware, the user will be prompted to upgrade the firmware, as the unit cannot be used in Recall unless the firmware installation is successful.

Corrupted or Old Firmware

If the firmware is corrupted or the unit has an old version of firmware, a prompt will appear upon starting the Recall software to indicate that firmware must be updated before the user can proceed.

The process described above can then be followed to update the latest firmware.

Unit Specifications

General	
Power	500 mA, 36 volts DC
Input	10k ohm, bridging, balanced, earth free
Output	Source Impedance: 80 ohms, balanced & earth free
	Maximum Output: +26dBu into 600 ohms
Gain	0dB, preset adjustment
Noise	-73dBu in the band 20 Hz to 20 kHz
Frequency Response	Flat, within 1dB from 20 Hz to 20 kHz
Distortion (Typical results measured at +9dBu with 800ms Recovery)	**Residual**, linear mode: 0.05%
	Compression mode (6:1 ratio): 0.2%
	Limiting mode at 20dB input: 0.4%

Limiter	
Ratio	>100:1
Level	Adjustable from +4 dBm to +20dBu in 1dB steps
Attack Time	5 mS (slow) or selectable between 100 µS to 2 mS (Fast)
Recovery Time	Selectable between 100 mS / 200 mS / 800 mS / Auto

Compressor	
Ratio	Selectable between 1.5:1 / 2:1 / 3:1 / 4:1 / 6:1
Threshold	Adjustable from -20dBu to +10 dBu in 2 dB steps
Attack Time	5 mS
Recovery Time	Selectable between 400 mS / 800 mS / 1500 mS / Auto
Gain Make Up	Adjustable Gain make-up available from 0 dB to +20 dB

Meter	Switched to indicate either: • Gain reduction control (up to 16dB), or • Input or Ouput signal level (-16dBu to +12dBu) Action approximates to that of PPM.